
IDAHO

GEOLOGICAL SURVEY

Extract from:
Technical presentations to the Advisory Board
December 16, 2020

Oil and Gas Program
Dr. Mark Barton



IGS Petroleum System Research (WSRP)

Basin Framework and Petroleum System

- Configuration of Reservoirs, Seals, Source Rocks, and Traps

Reservoir Presence and Effectiveness

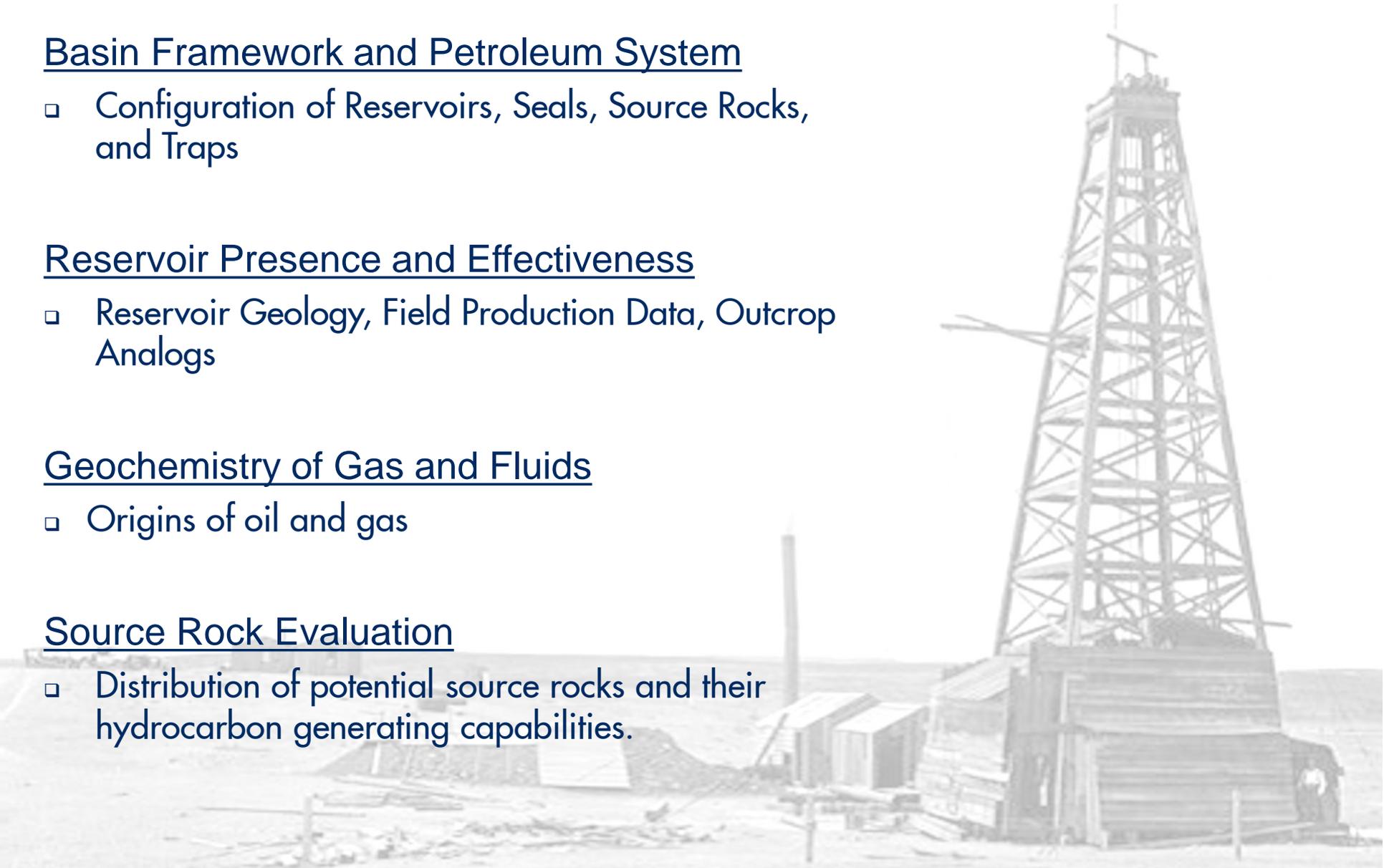
- Reservoir Geology, Field Production Data, Outcrop Analogs

Geochemistry of Gas and Fluids

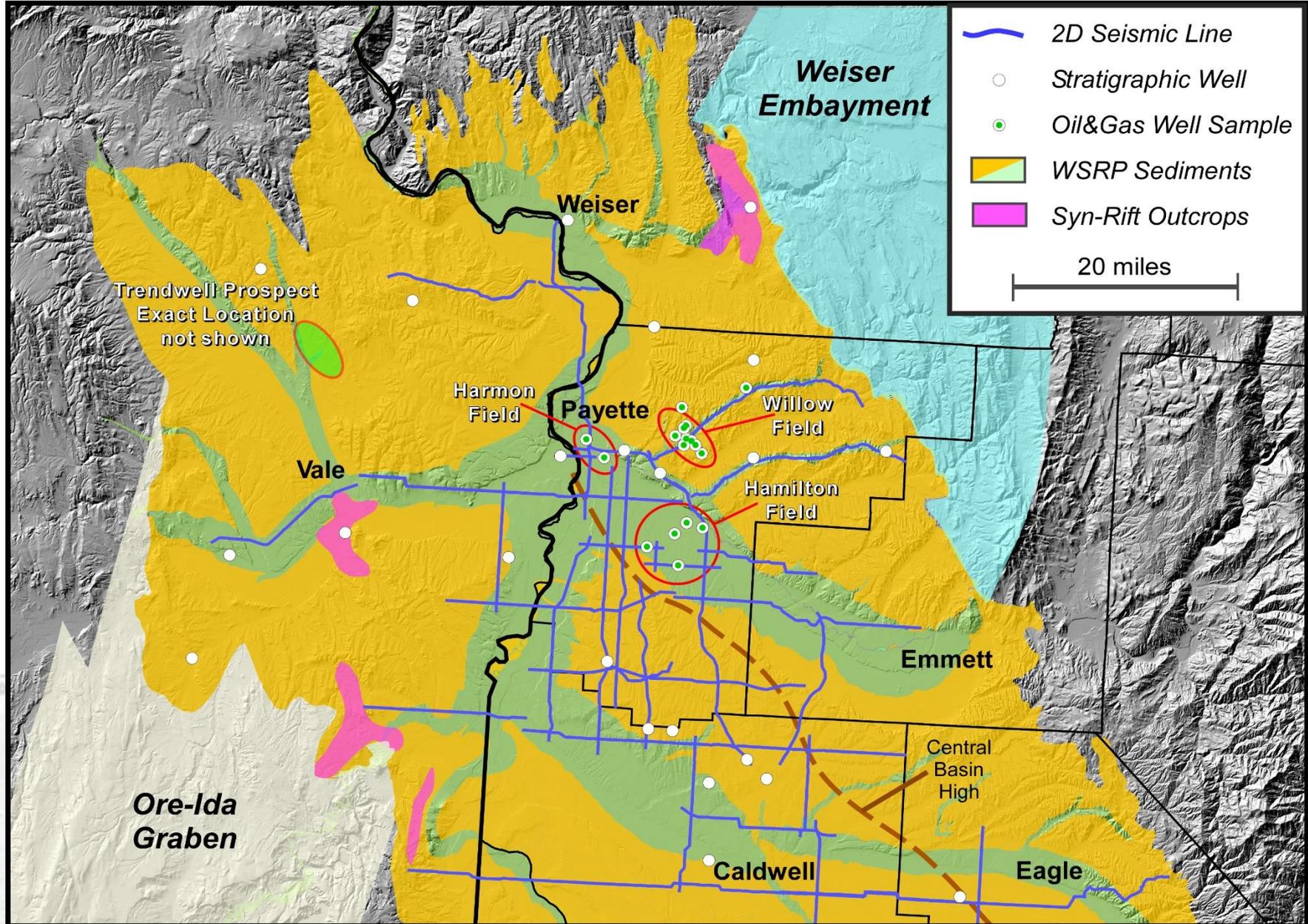
- Origins of oil and gas

Source Rock Evaluation

- Distribution of potential source rocks and their hydrocarbon generating capabilities.



Western Snake River Plain (WSRP)



Syn-Rift Reservoir Analogs

A



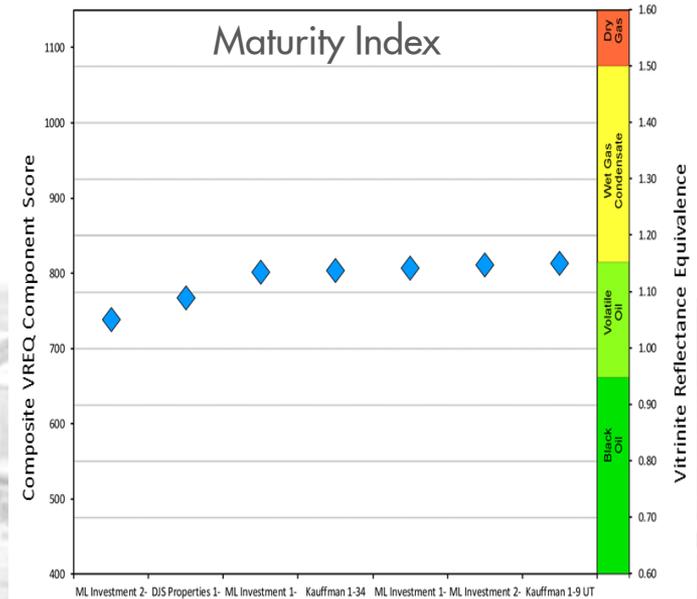
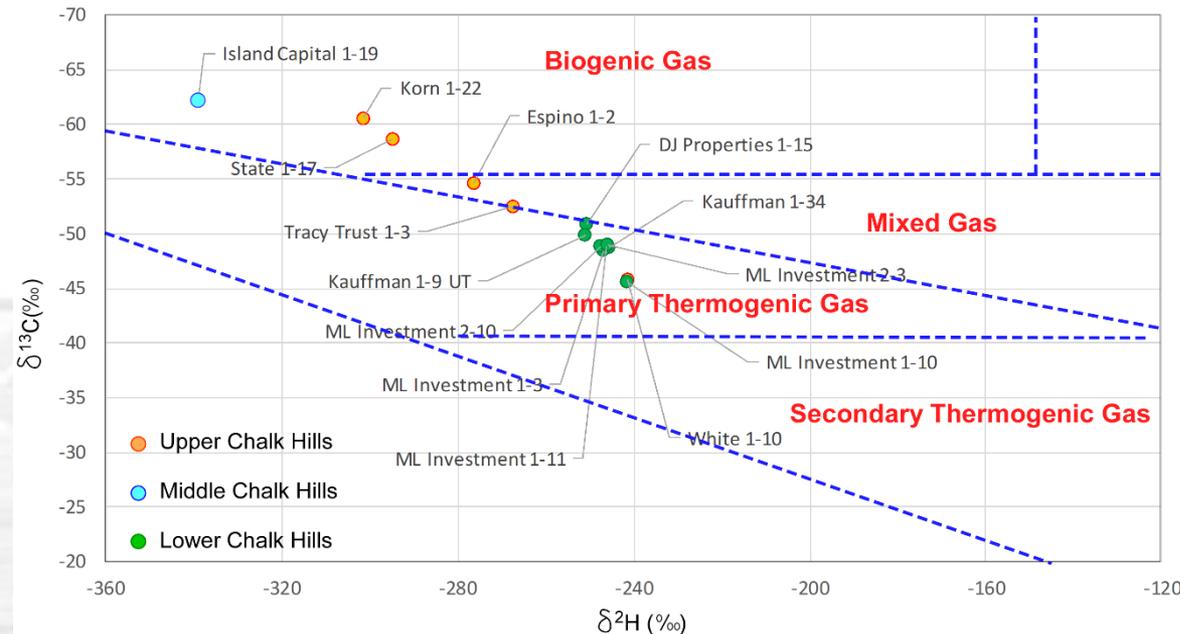
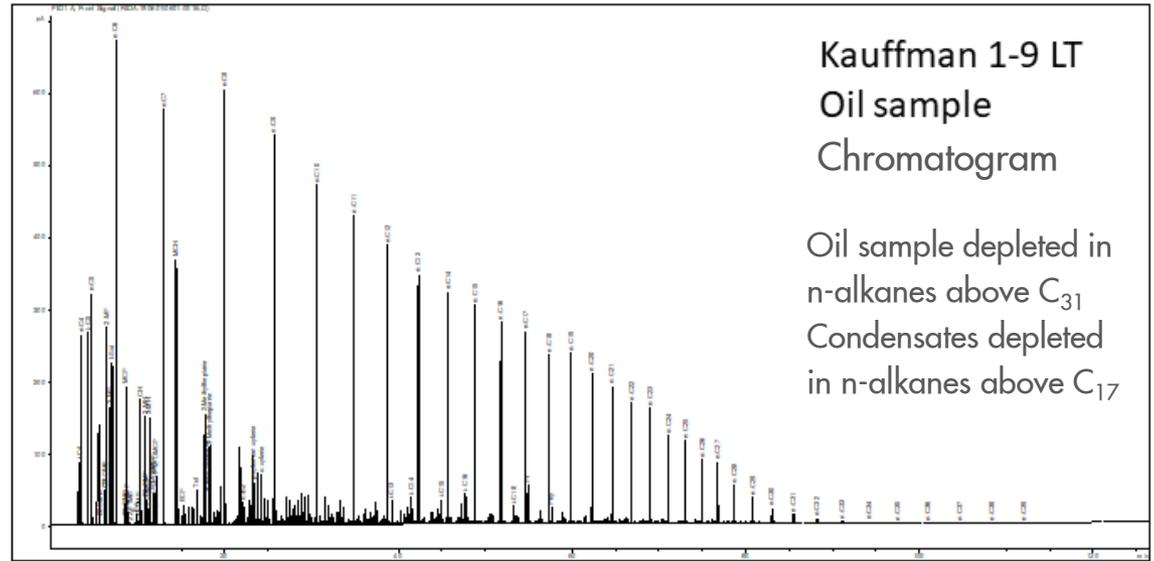
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Oil and Gas Geochemistry

Biomarkers and isotopic signatures used to assess the origins of oil and gas.

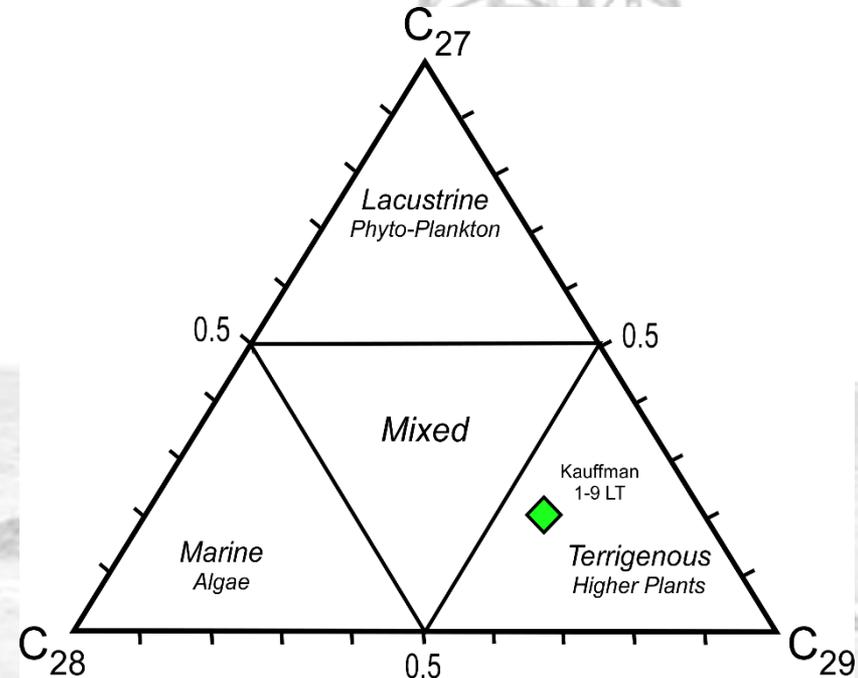
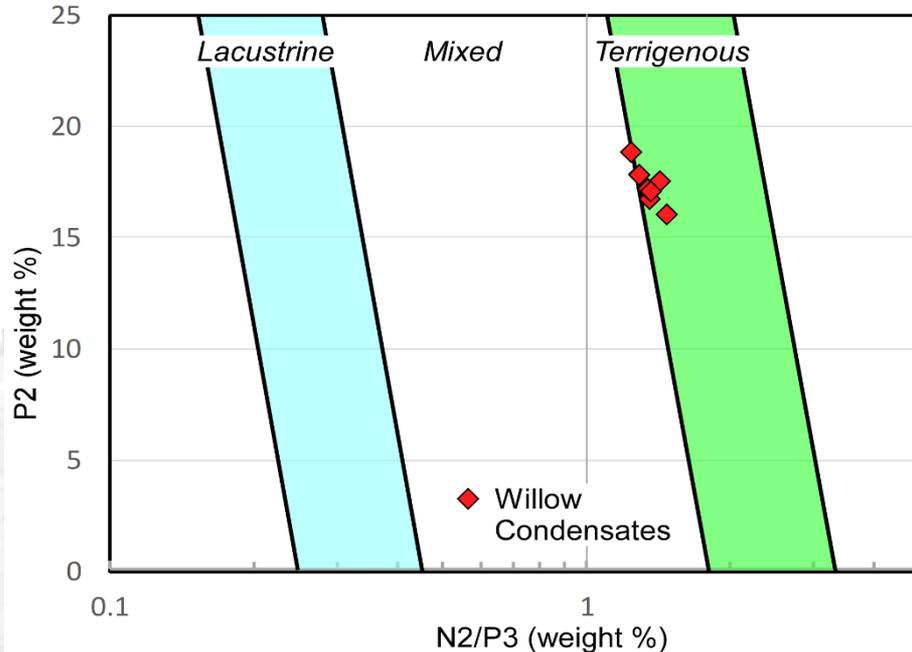
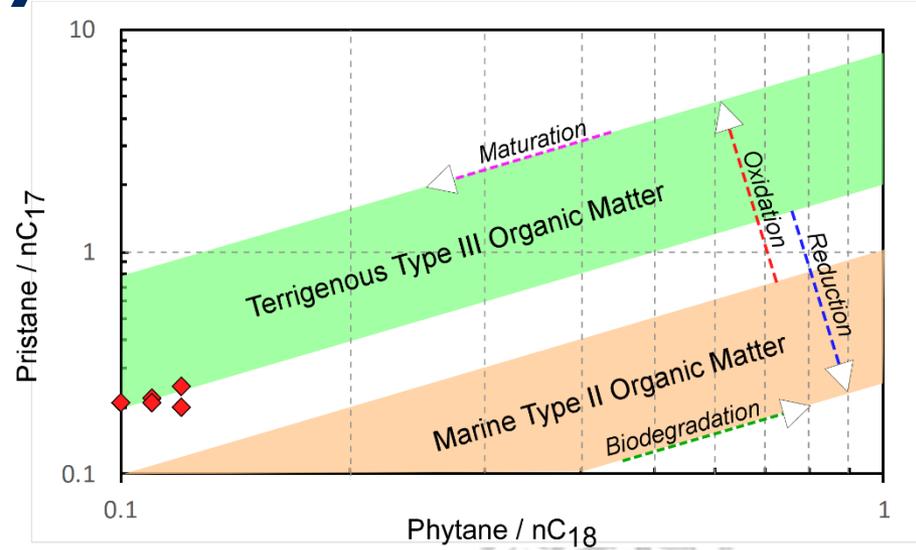
- ❑ LCH reservoirs contain wet gas, while UCH reservoirs are a mix of wet and dry gas.
- ❑ Dry gas has a biogenic origin while wet gas has a thermogenic origin.
- ❑ Maturation temperature of wet gas was around 120 degrees Fahrenheit. Equivalent to a depth of 5-8 thousand feet.
- ❑ Secondary cracking of oil to produce gas not suggested.



Oil and Gas Geochemistry

Biomarker indices suggest hydrocarbons largely sourced from terrigenous organic material that accumulated within a slightly oxidizing environment.

Results are consistent with middle Miocene sediments associated with the Lower Chalk Hills, Payette, or Columbia River Basalts



Future Plans

Wrap-up oil geo-chemistry work and publish findings.

Interpret additional 2D seismic data (+300 miles).

Construct maps of key surfaces, faults, and major facies associations. Covert data into a form that can utilized in 3d models of the subsurface (applicable to O&G, GW, Geothermal, CO₂ Sequestration, etc.)

Use collected data to basin model and assess hydrocarbon potential.

Conduct reconnaissance in South-Central Idaho with regards to potential source rocks such as the Phosphoria and Elko Formations.

